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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 09/867,803
Filing Date: May 31, 2001
Appellant(s): CHOI ET AL.

Michael N. Haynes
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed June 15, 2007 appealing from the Office action mailed June 28, 2006.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

No amendment after final has been filed.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

No evidence is relied upon by the examiner in the rejection of the claims under appeal.

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 101

1. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 1-8 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

According to current Office policy with respect to statutory subject matter under 35 USC 101, analysis for determining patent eligible subject matter under §101 is a 4 step process:

- First, does the claimed invention fall within one of the four statutory categories?
- Second, does the claimed invention fall within a judicial exception?
- Third, does the claimed invention provide a practical application? and,

- Fourth, does the claimed invention wholly preempt all substantial applications of a judicial exception?

All four steps must be applied to each and every claim to form a complete analysis

Claims 1-8 are directed to nonstatutory subject matter because the claimed invention does not provide a practical application. A claim is directed to a practical application when there is either a physical transformation or when a useful, concrete and tangible result is produce. The invention of claims 1-8 do not transforms an article or physical object to a different state or thing. Data transformation is not a physical transformation. Data, by definition, is intangible, so the claims must go further and have a tangible result. Thus, manipulation of data in a computer is not, in and of itself, sufficient for establishing that a claim is statutory.

The next step in the analysis is to determine if the claim is otherwise directed to a useful, concrete and tangible result. The focus is on the result of the claim as a whole, not the individual steps or structure used to produce the result. In this case, the result of the steps recited in claims 1-4 appear to be a number (i.e., "the percent", "purposeful probability", "the composition analysis scores", or "the Bayes probability") outputted in the last step of each claim, wherein the outputted number does not provide any practical application which produce a useful, concrete and tangible result. Claims 1-8 are therefore rejected as nonstatutory for failing to comply with 35 USC 101.

Claims 6 and 8 recite "An apparatus" comprising means for performing functions. However, as seen in claim 5 and 7, such means are construed as "instructions for activities", or computer program per se. The claimed "apparatus" therefore comprises only a set of instructions. The computer readable medium must be physical structure which provides the functional descriptive material in usable form to permit the functionality to be realized with the computer. A program product which does not explicitly include such a medium, a program per se, a signal or other type of transmission media that fails to include the hardware necessary to realize the functionality (e.g., a transmitter or a receiver), and a piece of paper with the functional descriptive material written on it are all examples of media which are not believed to enable the functionality to be realized with the computer. Claims 6 and 8 are therefore rejected as nonstatutory for failing to comply with 35 USC 101.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 1, 3-6 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to

which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Claims 1, 3-6 contain the limitation "calculating a percent of proxy values for the plurality of variables that equals a mode of that observation's corresponding cluster's proxy values for the corresponding variables" which was not described in the specification in such a way as to enable one skill in the art to which it pertains, or with which it is most nearly connected, to make and/or use of the invention.

(10) Response to Argument

i. Claims 1-8 are rejected under 35 U.S.C 101 as being directed to non-statutory subject matter.

1. Claim 1

Claim 1 is directed to nonstatutory subject matter because the claimed invention does not provide a practical application of an abstract idea. A claim is directed to a practical application when there is either a physical transformation or when a useful, concrete and tangible result is produced. The invention of claim 1 does not transforms an article or physical object to a different state or thing. Data transformation is not a physical transformation. Data, by definition, is intangible, so the claims must go further and have a tangible result. Thus, manipulation of data in a computer is not, in and of

itself, sufficient for establishing that a claim is statutory. The next step in the analysis is to determine if the claim is otherwise directed to a useful, concrete and tangible result. The focus is on the result of the claim as a whole, not the individual steps or structure used to produce the result. In this case, the result of the steps recited in claim 1 is a "percent", which is, by definition, a number in the range between 0-100 outputted in the last step of the claim, wherein the outputted number does not provide any practical application which produce a useful, concrete and tangible result. Claim 1 is therefore rejected as nonstatutory for failing to comply with 35 USC 101.

Appellant argued that the Office Action provides no evidence that the claimed subject matter does not produce a useful, concrete, and tangible result. The examiner respectfully disagree. As discussed in the 101 rejection above, claim 1 is directed a mathematical algorithms for calculating "a percent" based on an inputted data set and outputting the percent. Unpatentable mathematical algorithms are identifiable by showing they are merely abstract ideas constituting disembodied concepts or truths that are not "useful." From a practical standpoint, this means that to be patentable an algorithm must be applied in a "useful" way. In some particular case, the result "percent" may be useful, such as knowing the percent of customers who younger than 12 year old would help the store to make decision to carry more children products, or the percent of voters who votes for Republican would help politician to plan a successful campaign. However, the claimed "**percent of proxy values for the plurality of variable that equals a mode of that observation's corresponding cluster's proxy**

value for the corresponding variables" does not have any meaning to an ordinary skilled in the art. Neither the claims or the specification disclose how to interpret the outputted "percent" to make it useful. For example, if the percent for 1st observation is 5% and the percent for 2nd observation is 99%, then it is unclear what is the meaning of these number ? Which observation is better, worse, or more accurate, improper ? and how it provide a practical application which produce useful, concrete and tangible result.

Appellant attempted to show the usefulness of the claimed invention by referring to the specification at page 19, lines 6-11. However, this text portion only discussed the background of method 3, "Champion/Challenger Clustering Refinement", while the claimed invention is directed to method 4, "Composition Analysis". As seen at page 7, the specification discloses eight different inventive techniques (i.e., methods), and claims 1-8 are directed to method 4, "Composition Analysis" (See Fig. 4), which is a separate method. This cited text portion is therefore unrelated to the claimed invention. Further, the text portion only discusses the usefulness of "segmentation" but does not disclose how the "percent" is used to achieved a useful, concrete and tangible result, or how the percent is used for "**evaluating a cluster assignment for an observation**" as recited in the preamble.

Appellant argued that "outputting the percent for each observation" is comparable to momentarily fixing a final share price for recording and reporting purposes that can be accepted and relied upon by regulatory authorities and in subsequent trades". The

examiner respectfully disagrees. In *State Street*, the court hold that "the transformation of data, representing discrete dollar amounts, by a machine through a series of mathematical calculations into a final share price, constitutes a practical application of a mathematical algorithm, formula, or calculation, **because it produces "a useful, concrete and tangible result"--a final share price momentarily fixed for recording and reporting purposes and even accepted and relied upon by regulatory authorities and in subsequent trades"**. Clearly, "a final share price" is useful, concrete and tangible result because an ordinary skilled in the art would know that it can be used for recording and reporting purposed and further **it is accepted** and **relied upon by regulatory authorities** and in subsequent trades. However, "**percent of proxy values for the plurality of variable that equals a mode of that observation's corresponding cluster's proxy value for the corresponding variables**" is apparently unknown to an ordinary skilled in the art and therefore does not have a real world practical application/use. Appellant were given chances to provide a real world practical application/use of the result "percent for each observation", but were unable to particularly point out at least one, either in the specification or in the knowledge of an ordinary skilled in the art.

In *Alappat* , the court held that data, transformed by a machine through a series of mathematical calculations to produce a smooth waveform display on a rasterizer monitor, constituted a practical application of an abstract idea (a mathematical algorithm, formula, or calculation), **because it produced "a useful, concrete and tangible result"--the smooth waveform**.

Similarly, in *Arrythmia Research Technology Inc.* v. *Corazonix Corp.* , 958 F.2d 1053, 22 USPQ2d 1033 (Fed.Cir. 1992), the court held that the transformation of electrocardiograph signals from a patient's heartbeat by a machine through a series of mathematical calculations constituted a practical application of an abstract idea (a mathematical algorithm, formula, or calculation), **because it corresponded to a useful, concrete or tangible thing -- the condition of a patient's heart**.

In conclusion, "**outputting the percent for each observation**" is **NOT** comparable to "final share price" in *State Street*, or "**the smooth waveform**" in Alappat, "**the condition of a patient's heart**" in *Arrythmia Research Technology Inc.* v. *Corazonix Corp.*

Appellant further argued that "this claimed activity, when read in light of the specification, would necessarily utilize an I/O device", and therefore the "outputting" would utilizes an audio and/or visual device or a monitor, the examiner respectfully disagrees. Neither the claim nor the specification discloses that the percent is outputted utilizing an I/O device. From the languages of the claim, "the percent" is an output of a mathematical algorithm which receives "a data set" as input to perform percentage calculation. Therefore**, if appellant's invention of claim 1 were patentable, anyone who wish to calculate a percent based on an input data set using a particular formula would be required to seek appellant's permission,** regardless how the percent is used after calculation.

In view of the discussion above, Claim 1 is directed to nonstatutory subject matter and the 35 U.S.C 101 to claim 1 should be sustained.

2. Claim 2

Appellant's arguments regarding claim 1 are identical to the arguments of claim 1. Therefore, the discussion regarding claim 1 above is also applied to claim 2.

3. Claim 3

Appellant's arguments regarding claim 3 are similar to the arguments of claim 1. The discussion regarding claim 1 above is also applied.

Appellant argued that "outputting the composition analysis scores for each observation in each cluster" is useful, concrete and tangible result and comparable to momentarily fixing a final share price for recording and reporting purposes that can be accepted and relied upon by regulatory authorities and in subsequent trades" as in *State Street*. The examiner respectfully disagrees. unlike "final share price" in *State Street*, the composition analysis scores are obtained by calculating a logarithm of the ratio of purposeful probability to serendipity probability. The composition analysis scores are the results of calculation using well known mathematical algorithms and, by themselves, do not have any meaning to an ordinary skilled in the art, and therefore are not a "useful, concrete and tangible result"

4. Claim 4

Appellant's arguments regarding claim 5 are similar to the arguments of claim 1. The discussion regarding claim 1 above is also applied.

Appellant further argued that "outputting the Bayes probability that each observation can be in each cluster" is useful, concrete and tangible, comparable to momentarily fixing a final share price for recording and reporting purposes that can be accepted and relied upon by regulatory authorities and in subsequent trades" as in State Street. The examiner respectfully disagrees. unlike "final share price" in State Street, the Bayes probability is obtained by executing the well known Bayes algorithm, which is a number between 0 and 1 and by itself does not have any meaning to an ordinary skilled in the art, and therefore are not a "useful, concrete and tangible result"

5. Claim 5

Appellant's argument regarding claim 5 are similar to the arguments of claim 4. The discussion regarding claim 4 above is also applied.

6. Claim 6

Appellant's argument regarding claim 6 are similar to the arguments of claim 1. The discussion regarding claim 1 above is also applied.

Appellant further argued that "no evidence is presented that, one having ordinary skill in the art would interpret the phrase "apparatus" to comprises "only a set of instruction. On the contrary, the claim 6, in conjunction with claim 5 are clear evidences

that the claimed apparatus comprises only a set of instruction. Claim 6 recites an apparatus comprises means for obtaining a data set, means for calculating and means for outputting, where claim 5 shows each of the means functions is performed by "instruction". The claim is therefore lacks of physical structure which provide the functional descriptive material in usable form the permit the functionality be realized with the computer.

7. Claim 7

Appellant's argument regarding claim 7 are similar to the arguments of claim 5. The discussion regarding claim 5 above is also applied.

8. Claim 8

Appellant's argument regarding claim 8 are similar to the arguments of claim 6. The discussion regarding claim 6 above is also applied.

ii Claim 1, 3-6 are rejected under 35 U.S.C 112, 1st paragraph as failing to comply with the enablement requirement.

Appellant argued that the Office Action appears to improperly group claims together in a common rejections without any showing that the rejection is equally

applicable to all claims in the group On the contrary, it is clear that claims 1, 3-6 are rejected as a group because they all contain the same rejected limitation "**calculating a percent of proxy values for the plurality of variables that equals a mode of that observation's corresponding cluster's proxy values for the corresponding variables**" which was not described in the specification in such a way to enable one skill in the art to which it pertains, or with which it is most nearly connected, to make and/or use of the invention. Since appellant's arguments regarding each claims in this group are similar, the Examiner will also group his response for claims 1, 3-6 to one group.

First, appellant argued that the Office Action provides no rational basis as to why the application does not teach the claimed subject matters. On the contrary, appellant was unable to point out how the step of "**calculating a percent of proxy values for the plurality of variables that equals a mode of that observation's corresponding cluster's proxy values for the corresponding variables**" is taught or disclosed in the specification. The specification did not particularly identify each of the operands required in calculating of "percent". The specification did not disclose the detail of how complex components are constructed. For example, the specification does not disclose how to obtain "**a mode of that observation's corresponding cluster's proxy values for the corresponding variable**" to enable an ordinary skilled in the art to perform the calculating of **the percent of proxy values for the plurality of variables that equals a mode of that observation's corresponding cluster's proxy values for the corresponding variables.** The only mention of this limitation is disclosed in the specification at page 52 lines 8-11, reproduced below:

> At activity 4080, for each observation, a percent of proxy values for the variables that equals a modes of that observation s (sic) cluster s (sic) proxy values for the corresponding variables can be calculated. At activity 4085, for each observation, the calculated percent can be stored or outputted.

Given a data set containing one proxy value for each of variables and a cluster assignment for the observation, it is unclear how to calculate **a percent of proxy values for the plurality of variables that equals a mode of that observation's corresponding cluster's proxy values for the corresponding variables**" as claimed because the formula to calculate "a percent" is unknown and the language of the claims make it incomprehensible.

For the above reasons, it is believed that the rejections should be sustained.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

Respectfully submitted,

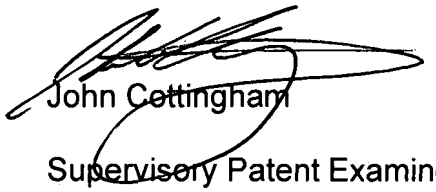
Khanh B. Pham

Primary Examiner

Conferees:

Hosain Alam

Supervisory Patent Examiner



John Cottingham

Supervisory Patent Examiner